

REQUEST FOR RECONSIDERATION	Application #	10/659,738
	Confirmation #	3454
	Filing Date	September 11, 2003
	First Inventor	WATTS
	Art Unit	1753
	Examiner	Wong, Edna
	Docket #	P08042US00/BAS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

S I R:

In response to the final Office Action mailed January 18, 2007, in which all pending claims, claims 1-27, were rejected, Applicants respectfully submit the following Request for Reconsideration.

Claims 1-27 are pending but stand rejected on prior art grounds in the present application. Applicants respectfully traverse the rejection to the claims and respectfully submit that the present application is in condition for allowance based on the discussion which follows.

Claims 1-14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Merez et al. (U.S. Patent No. 4,006,065) (hereinafter "Merez") in combination with Haswell et al. (U.S. Patent No. 6,989,090) (hereinafter "Haswell '090") and Haswell, S.J., "Development and Operating Characteristics of Micro Flow Injection Analysis Systems Based on Electroosmotic Flow" (hereinafter "the Analyst article"). Contrary to the rejection, it would not have been obvious for one of ordinary skill in the art to combine the references cited to make the present invention obvious.

The present invention is directed to a novel and non-obvious method of reacting carboxylic acids using electrodes to apply an electrical voltage between opposite ends of a channel containing a liquid, whereby the reaction takes place in the liquid in the channel.

One of ordinary skill in the art would not have had a reasonable expectation that the present carboxylic acid reaction would occur within a channel spaced from the electrodes. The cited reference of Meresz clearly teaches a method in which the reaction occurs at the anode surface. Moreover, from Meresz, one of ordinary skill in the art would recognize that its reaction is a Kolbe-type reaction which takes place at the anode surface in an electrochemical system.

From the Meresz reference, one of ordinary skill in the art would have believed that in order for the carboxylic acid chemical reaction to occur, one would necessarily have to use the Meresz system, in which the reaction occurs at the anode surface. Accordingly, from Meresz, there would have been no reasonable expectation that one could substitute its system for the micro-channels of Haswell. Although the Examiner has alleged that the channel of Haswell would have been anodically charged, one of ordinary skill in the art would not have had any reasonable expectation that a charged channel disclosed by Haswell would be successful in a carboxylic acid reaction of the type taught by Meresz, as the charged channel would not have been considered analogous to the anode of the Meresz system.

Prior to the present invention, one of ordinary skill in the art would have understood from Haswell that prior micro-fluidic systems or micro-reactors were charged, but that the charge was used to control osmotic flow; however, prior to the present invention, the charge within the micro-channel was not used to affect or control the reactions

themselves. Therefore, one of ordinary skill in the art would not have considered that a charged channel could substitute for an anode in a carboxylic acid reaction. Accordingly, one would not have been motivated to modify the teachings of Meresz and Haswell to form a system in which a carboxylic acid reaction occurs in the channel spaced from the electrode.

Moreover, although the Examiner refers to a negative charge on surfaces of the micro-channels in Haswell, it is not entirely clear if the Examiner is associating the negative charge on the surface of the channel with the negative charge of the anode in the electrochemical reaction described in Meresz. However, it would appear that the Examiner is alleging that it would have been obvious to perform the Meresz reaction in a micro-reactor, alleging that it would have been obvious that the negative charges on the surface of the micro-channel would work in the same way as the negative charges on the anode of the electrochemical system in Meresz.

Applicants respectfully disagree with the Examiner's presumption. The negative charge on the surface of the micro-channels have only been considered from the point of view of the role of the negative charge in an osmotic flow. Applicants are not aware of any prior art which discusses that negative charges at the surface of the micro-channel may play a part in a chemical reaction performed in the micro-reactors, such as those taught by Haswell. Therefore, it would not have been obvious at all to associate the negative charges at the surface of a micro-channel with the negative charge at an anode of an electrochemical system. Moreover, the precise mechanism by which the current invention works has to this point not been fully appreciated, whereas it may be that the

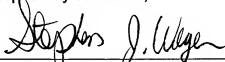
negative charges on the surface of the micro-channel play some part in facilitating the chemical reaction claimed. This has not been definitively demonstrated.

Furthermore, as previously discussed in the Remarks accompanying the November 30, 2006 Amendment, the then submitted prior art review article in the *Russian Chemical Reviews*, in the fourth paragraph of the right hand column on page 176, indicates that in a classic Kolbe reaction, the formation of higher platinum oxides at the electrode is a necessary condition for the electrolytic condensation. However, micro-reactors, such as those disclosed by Haswell, are commonly made of glass or quartz, and there will be no higher platinum oxides formed at the surfaces of the micro-channels. Accordingly, based on the *Russian Chemical Reviews* and the disclosure of Meresz, one of ordinary skill in the art, having full knowledge of Kolbe-type reactions and the variant of the Kolbe reaction described in Meresz, would not believe that a carboxylic acid reaction could occur in the channels of a micro-reactor because the required higher platinum oxides are not present.

Based on the foregoing, Applicants respectfully submit that claims 1-27 are not obvious in view of the prior art of record.

In view of the foregoing, Applicants respectfully submit that the present application is in condition for allowance.

Respectfully submitted,



By: Stephen J. Weyer
Reg. No.: 43,259

Date: April 18, 2007

STITES & HARBISON PLLC ♦ 1199 North Fairfax St. ♦ Suite 900 ♦ Alexandria, VA 22314
TEL: 703-739-4900 ♦ FAX: 703-739-9577 ♦ CUSTOMER No. 00881